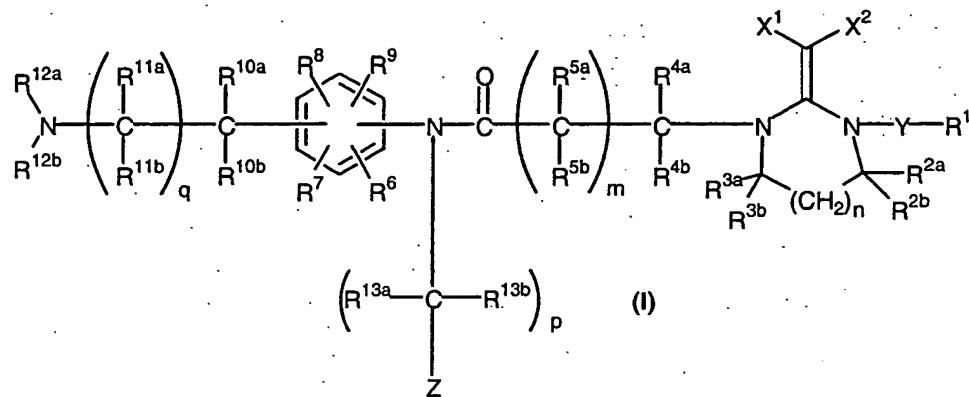


CLAIMS

What is claimed is:

1. An imidazolidine compound represented by the following Formula (I):



5 or a physiologically acceptable salt thereof, wherein:

Z is

hydrogen,

halogen,

hydroxy,

10 -COOH,

-CONH₂,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted haloalkyl,

substituted or unsubstituted heteroalkyl,

5

substituted or unsubstituted cycloalkyl,
substituted or unsubstituted polycycloalkyl,
substituted or unsubstituted lower alkenyl,
substituted or unsubstituted cycloalkenyl,
substituted or unsubstituted polycycloalkenyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted lower alkanoyl,
substituted or unsubstituted lower alkoxy carbonyl,

10

substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,

15

substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
a substituted or unsubstituted non-aromatic heterocyclic group,
or

Z and R⁶ taken together form a bond, or

Z and R^{13a} taken together form a bond;

20

X¹ and X² are each, independently,

hydrogen,

-CN,

-NO₂,

-SO₂R^{15a},

-SO₂NR^{15a}R^{15b},

-C(=O)-R^{15a},

-C(=O)-OR^{15a}, or

-C(=O)-NR^{15a}R^{15b}, wherein

25

R^{15a} and R^{15b} are each, independently,

hydrogen,

-120-

substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl, or
substituted or unsubstituted aralkyl;

5 Y is

a bond,
-(C=O)-, or
-(CR^{16a}R^{16b})-, wherein

R^{16a} and R^{16b} are each, independently,

10 hydrogen,

substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl, or
substituted or unsubstituted aralkyl;

15 R¹ is

substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted polycycloalkyl,
substituted or unsubstituted lower alkenyl,
substituted or unsubstituted cycloalkenyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
a substituted or unsubstituted non-aromatic heterocyclic group;

20

25

5

R^{2a} , R^{2b} , R^{3a} , R^{3b} , R^{4a} , R^{4b} , R^{5a} , and R^{5b} are each, independently,
hydrogen,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted aralkyl, or
substituted or unsubstituted heteroaralkyl;

10

R^6 , R^7 , R^8 , and R^9 are each, independently,
hydrogen,
hydroxy,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyl,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted lower alkoxycarbonyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl,
halogen,

15

20

-CN,
-NO₂,
-C(=O)-OR^{17a},
-NR^{17a}R^{17b}, or
-C(=O)-NR^{17a}R^{17b}, wherein

25

R^{17a} and R^{17b} are each, independently,

hydrogen,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl,

or

5 R^{17a} and R^{17b} taken together with the nitrogen atom to which they
are bonded form a substituted or unsubstituted heterocyclic group
containing at least one nitrogen atom;

10 R^{10a} , R^{10b} , R^{11a} , and R^{11b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl,

substituted or unsubstituted heteroaralkyl, or

substituted or unsubstituted lower alkoxyalkyl;

15 R^{12a} and R^{12b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl, or

20 substituted or unsubstituted heteroaralkyl,

or

R^{12a} and R^{12b} taken together with the nitrogen atom to which they
are bonded form a substituted or unsubstituted heterocyclic group
containing at least one nitrogen atom;

25 R^{13a} and R^{13b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl, or

substituted or unsubstituted heteroaralkyl,

wherein when p is 2 or more, multiple R^{13a}'s are independently

the same or different and multiple R^{13b}'s are independently the same or different;

m is an integer from 0 to 4;

n is an integer from 0 to 6;

p is an integer from 0 to 9; and

q is an integer from 0 to 5

2. The imidazolidine compound according to Claim 1 wherein

Z is

15 hydrogen,

halogen,

hydroxy,

COOH,

CONH₂,

20 substituted or unsubstituted lower alkyl,

substituted or unsubstituted haloalkyl,

substituted or unsubstituted heteroalkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted lower alkenyl,

substituted or unsubstituted lower alkoxy,

substituted or unsubstituted lower alkanoyloxy,

substituted or unsubstituted lower alkanoyl,

25

-)
- substituted or unsubstituted lower alkoxy carbonyl,
substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
a substituted or unsubstituted non-aromatic heterocyclic group,
or
- Z and R⁶ taken together form a bond, or
Z and R^{13a} taken together form a bond;
- 10 X¹ and X² are each, independently,
 hydrogen,
 -CN,
 -NO₂,
 -C(=O)-R^{15a},
15 -C(=O)-OR^{15a}, or
 -C(=O)-NR^{15a}R^{15b}, wherein
 R^{15a} and R^{15b} are each, independently,
 hydrogen,
 substituted or unsubstituted lower alkyl,
20 substituted or unsubstituted cycloalkyl,
 substituted or unsubstituted aryl, or
 substituted or unsubstituted aralkyl;
- 25 R⁶, R⁷, R⁸, and R⁹ are each, independently,
 hydrogen,
 substituted or unsubstituted lower alkyl,
 substituted or unsubstituted lower alkoxy,
 substituted or unsubstituted lower alkanoyl,

substituted or unsubstituted lower alkoxy carbonyl,

substituted or unsubstituted aryl,

substituted or unsubstituted heteroaryl,

halogen,

5 -CN,

-NO₂,

-C(=O)-OR^{17a},

-NR^{17a}R^{17b}, or

-C(=O)-NR^{17a}R^{17b}, wherein

10 R^{17a} and R^{17b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl,

15

or

R^{17a} and R^{17b} taken together with the nitrogen atom to which they are bonded form a substituted or unsubstituted heterocyclic group containing at least one nitrogen atom;

20 m is an integer from 0 to 3;

n is an integer from 0 to 3;

p is an integer from 0 to 8; and

q is an integer from 0 to 3.

3. The imidazolidine compound according to Claim 2 wherein

25 X¹ and X² are each, independently,

hydrogen,

-CN, or

-NO₂;

R¹ is

- substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
5 substituted or unsubstituted lower alkenyl,
 substituted or unsubstituted lower alkoxy,
 substituted or unsubstituted lower alkanoyloxy,
 substituted or unsubstituted aralkyl,
 substituted or unsubstituted heteroaralkyl,
10 substituted or unsubstituted aryl,
 substituted or unsubstituted heteroaryl, or
 a substituted or unsubstituted non-aromatic heterocyclic group;

R^{2a}, R^{2b}, R^{3a}, R^{3b}, R^{4a}, R^{4b}, R^{5a}, and R^{5b} are each, independently,
hydrogen,

- 15 substituted or unsubstituted lower alkyl,
 substituted or unsubstituted cycloalkyl,
 substituted or unsubstituted aryl, or
 substituted or unsubstituted aralkyl;

R⁶, R⁷, R⁸, and R⁹ are each, independently,
hydrogen,

- 20 substituted or unsubstituted lower alkyl,
 substituted or unsubstituted lower alkoxy,
 substituted or unsubstituted heteroaryl,
 halogen,

- 25 -CN, or
 -NO₂;

R^{10a} , R^{10b} , R^{11a} , and R^{11b} are each, independently,

hydrogen,

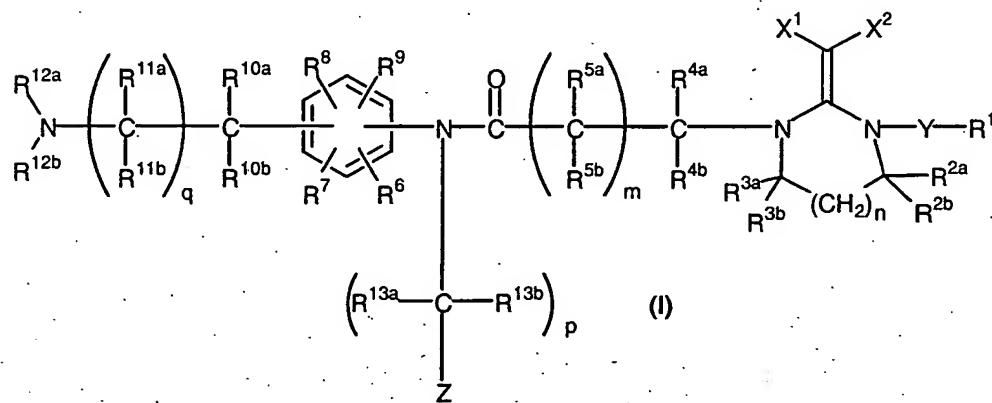
substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl, or

5 substituted or unsubstituted aryl.

4. A composition comprising the imidazolidine compound according to Claim 1 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

5. A method of inhibiting inflammation in an individual, comprising administering to the individual a therapeutically effective amount of an imidazolidine compound represented by the following Formula (I):



or a physiologically acceptable salt thereof, wherein:

Z is

- hydrogen,
halogen,
hydroxy,
-COOH,
5 -CONH₂,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted haloalkyl,
substituted or unsubstituted heteroalkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted polycycloalkyl,
10 substituted or unsubstituted lower alkenyl,
substituted or unsubstituted cycloalkenyl,
substituted or unsubstituted polycycloalkenyl,
substituted or unsubstituted lower alkoxy,
15 substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted lower alkanoyl,
substituted or unsubstituted lower alkoxy carbonyl,
substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,
20 substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
a substituted or unsubstituted non-aromatic heterocyclic group,
or
Z and R⁶ taken together form a bond, or
25 Z and R^{13a} taken together form a bond;

X¹ and X² are each, independently,
hydrogen,
-CN,

-NO₂,

-SO₂R^{15a},

-SO₂NR^{15a}R^{15b},

-C(=O)-R^{15a},

5 -C(=O)-OR^{15a}, or

-C(=O)-NR^{15a}R^{15b}, wherein

R^{15a} and R^{15b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

10 substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl;

Y is

a bond,

15 -(C=O)-; or

-(CR^{16a}R^{16b})-, wherein

R^{16a} and R^{16b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

20 substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl;

R¹ is

substituted or unsubstituted lower alkyl,

25 substituted or unsubstituted cycloalkyl,

substituted or unsubstituted polycycloalkyl,

substituted or unsubstituted lower alkenyl,

5

substituted or unsubstituted cycloalkenyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
a substituted or unsubstituted non-aromatic heterocyclic group;

10

R^{2a} , R^{2b} , R^{3a} , R^{3b} , R^{4a} , R^{4b} , R^{5a} , and R^{5b} are each, independently,
hydrogen,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted aralkyl, or
substituted or unsubstituted heteroaralkyl;

15

R^6 , R^7 , R^8 , and R^9 are each, independently,
hydrogen,
hydroxy,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyl,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted lower alkoxycarbonyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl,
halogen,
-CN,

20

25

-NO₂,

-C(=O)-OR^{17a},

-NR^{17a}R^{17b}, or

-C(=O)-NR^{17a}R^{17b}, wherein

5 R^{17a} and R^{17b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

10 substituted or unsubstituted aralkyl,

or

R^{17a} and R^{17b} taken together with the nitrogen atom to which they are bonded form a substituted or unsubstituted heterocyclic group containing at least one nitrogen atom;

15 R^{10a}, R^{10b}, R^{11a}, and R^{11b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

20 substituted or unsubstituted aralkyl,

substituted or unsubstituted heteroaralkyl, or

substituted or unsubstituted lower alkoxyalkyl;

R^{12a} and R^{12b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

25

substituted or unsubstituted aralkyl, or
substituted or unsubstituted heteroaralkyl,
or

5 R^{12a} and R^{12b} taken together with the nitrogen atom to which they are
bonded form a substituted or unsubstituted heterocyclic group
containing at least one nitrogen atom;

R^{13a} and R^{13b} are each, independently,

hydrogen,
substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted aralkyl, or
substituted or unsubstituted heteroaralkyl,

10 wherein when p is 2 or more, multiple R^{13a} 's are
independently the same or different and multiple R^{13b} 's are
independently the same or different;

m is an integer from 0 to 4;

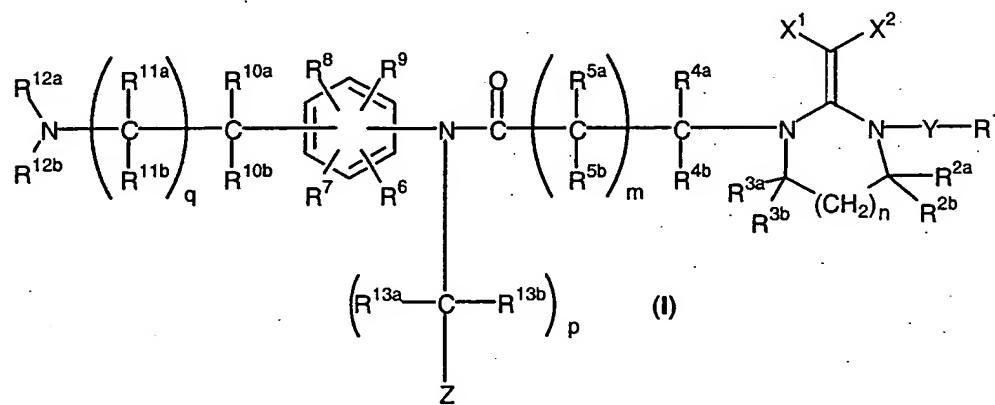
n is an integer from 0 to 6;

p is an integer from 0 to 9; and

20 q is an integer from 0 to 5

6. The method according to Claim 5 wherein said inflammation is a consequence
of an autoimmune disease.
7. The method according to Claim 5 wherein said inflammation is a consequence
of an allergic disease or condition.

8. The method according to Claim 5 wherein said inflammation is a consequence of infection.
9. The method according to Claim 8 wherein said infection is bacterial, viral, fungal or parasitic.
- 5 10. A method of treating an individual having a disease associated with pathogenic leukocyte recruitment and/or activation, comprising administering to the individual a therapeutically effective amount of an imidazolidine compound represented by the following Formula (I):



10 or a physiologically acceptable salt thereof, wherein:

Z is

hydrogen,

halogen,

hydroxy,

-COOH,

-CONH₂,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted haloalkyl,

substituted or unsubstituted heteroalkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted polycycloaliphatic hydrocarbons.

substituted or unsubstituted lower alkenyl.

substituted or unsubstituted cycloalkenyl

substituted or unsubstituted polycycloalkyl

substituted or unsubstituted lower alkoxyl groups.

substituted or unsubstituted lower alkanoyloxy

substituted or unsubstituted lower alkanoyl

substituted or unsubstituted lower alkoxycarbonyl

substituted or unsubstituted aralkyl

substituted or unsubstituted heterocyclic

is a good example of the kind of work that can be done by the new generation of scholars.

Mathematics Education 1

substituted or unsubstituted keto

a substituted or unsubstituted non-arenate.

group,

group,

or

Z and R^b taken together form a bond, or

Z and R^{13a} taken together form a bond;

X^1 and X^2 are each, independently,

hydrogen,

-CN,

-NO₂,

$$-\text{SO}_2\text{R}^{15a},$$

-135-

-SO₂NR^{15a}R^{15b},

-C(=O)-R^{15a},

-C(=O)-OR^{15a}, or

-C(=O)-NR^{15a}R^{15b}, wherein

5 R^{15a} and R^{15b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl;

10

Y is

a bond,

-(C=O)-, or

-(CR^{16a}R^{16b})-, wherein

15 R^{16a} and R^{16b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl;

20

R¹ is

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted polycycloalkyl,

substituted or unsubstituted lower alkenyl,

substituted or unsubstituted cycloalkenyl,

substituted or unsubstituted lower alkoxy,

25

substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted aralkyl,
substituted or unsubstituted heteroaralkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl, or
5 a substituted or unsubstituted non-aromatic heterocyclic group;

R^{2a} , R^{2b} , R^{3a} , R^{3b} , R^{4a} , R^{4b} , R^{5a} , and R^{5b} are each, independently, hydrogen,

10 substituted or unsubstituted lower alkyl,
substituted or unsubstituted cycloalkyl,
substituted or unsubstituted aryl,
substituted or unsubstituted aralkyl, or
substituted or unsubstituted heteroaralkyl;

15 R^6 , R^7 , R^8 , and R^9 are each, independently, hydrogen,
hydroxy,

substituted or unsubstituted lower alkyl,
substituted or unsubstituted lower alkoxy,
substituted or unsubstituted lower alkanoyl,
substituted or unsubstituted lower alkanoyloxy,
substituted or unsubstituted lower alkoxycarbonyl,
substituted or unsubstituted aryl,
substituted or unsubstituted heteroaryl,

20 25 halogen,
-CN,
-NO₂,

-C(=O)-OR^{17a},

-NR^{17a}R^{17b}, or

-C(=O)-NR^{17a}R^{17b}, wherein

R^{17a} and R^{17b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl, or

substituted or unsubstituted aralkyl,

5

10

R^{17a} and R^{17b} taken together with the nitrogen atom to which they are bonded form a substituted or unsubstituted heterocyclic group containing at least one nitrogen atom;

R^{10a} , R^{10b} , R^{11a} , and R^{11b} are each, independently,

15

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl,

substituted or unsubstituted heteroaralkyl, or

20

substituted or unsubstituted lower alkoxyalkyl;

R^{12b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl, or

25

substituted or unsubstituted heteroaralkyl,

or

R^{12a} and R^{12b} taken together with the nitrogen atom to which they are bonded form a substituted or unsubstituted heterocyclic group containing at least one nitrogen atom;

5

R^{13a} and R^{13b} are each, independently,

hydrogen,

substituted or unsubstituted lower alkyl,

substituted or unsubstituted cycloalkyl,

10

substituted or unsubstituted aryl,

substituted or unsubstituted aralkyl, or

substituted or unsubstituted heteroaralkyl,

15

wherein when p is 2 or more, multiple R^{13a}'s are

independently the same or different and multiple R^{13b}'s are

independently the same or different;

m is an integer from 0 to 4;

n is an integer from 0 to 6;

p is an integer from 0 to 9; and

q is an integer from 0 to 5

20 11. The method according to Claim 10, wherein said disease is an autoimmune disease.

12. The method according to Claim 10, wherein said disease is an allergic disease or condition.